

**EFFECTIVENESS OF JIGSAW COOPERATIVE LEARNING MODEL IN
HEAT AND TEMPERATURE ON STUDENT'S LEARNING OUTCOMES
GRADE X SMA SWASTA MUHAMMADIYAH 1 MEDAN
IN ACADEMIC YEAR 2011/2012**

**By:
Febriani Hastini Nst
081244210011
Physics Bilingual Education Study Program**



THESIS

**Submitted to fulfill the requirement for the degree of
Sarjana Pendidikan**

**PHYSICS DEPARTMENT
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
STATE UNIVERSITY OF MEDAN
MEDAN
2012**